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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/533,030

04/26/2005

Sciji Kai

81784.0329

2194

26021 7590 12/14/2007  
HOGAN & HARTSON L.L.P.  
1999 AVENUE OF THE STARS  
SUITE 1400  
LOS ANGELES, CA 90067

EXAMINER

LOPEZ ESQUERRA, ANDRES

ART UNIT

PAPER NUMBER

2818

MAIL DATE

DELIVERY MODE

12/14/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/533,030

Applicant(s)

KAI ET AL.

Examiner

Andrés López-Esquerria

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 and 8-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 04/26/2005, 12/05/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Claims 5 – 7 in the reply filed on November 5, 2007 is acknowledged.

### ***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

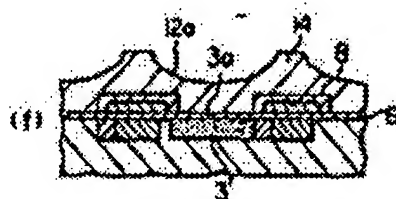
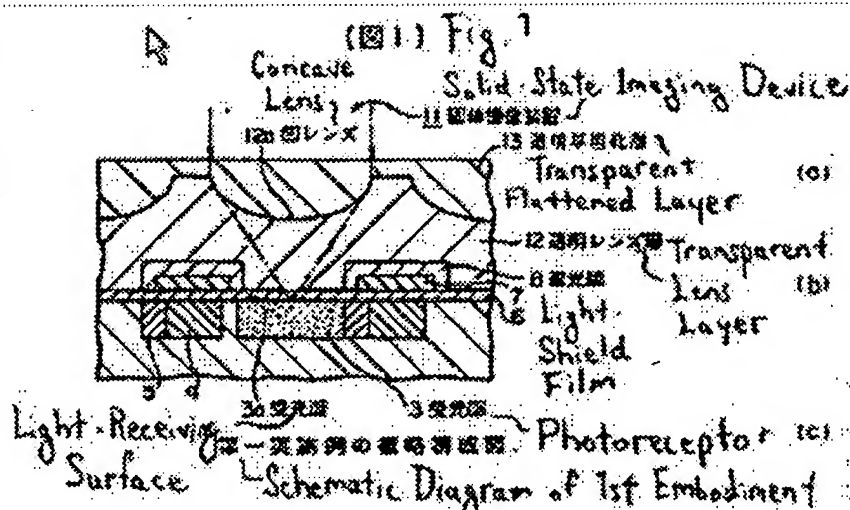
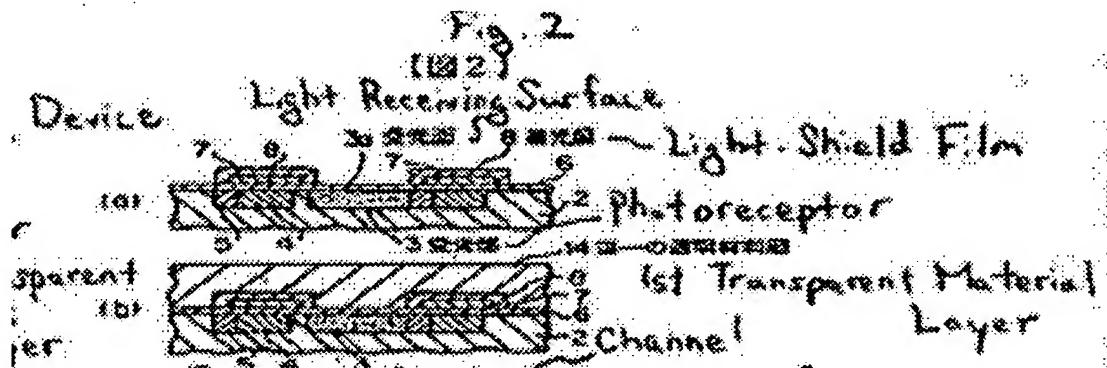
### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 5 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jyunya Suzuki et al. (Japan Publication No. 9-27608) (Suzuki) in view of Sano et al US 6,030,852 (Sano).



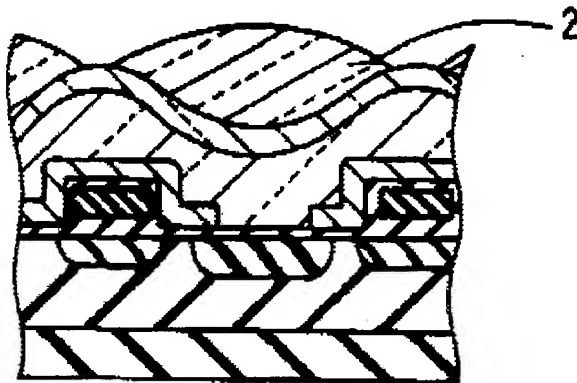
本発明の工程説明図 Procedure Diagrams of Present Invention

6. As for claim 5, Suzuki discloses and shows in Figs. 1, 2c, and 2f a method of manufacturing a solid state imaging device comprising:

- a. an insulating film (12/14) etching step for etching a fiat light transmitting insulating film along a predetermined mask pattern to form convex regions between adjacent micro lenses (Suzuki discloses (Pages 10 – 12, [0017] - [0018]) the use of etching to create the convex form of the layer);
- b. a lens film laminating step for laminating a light transmitting lens film (13) on the insulating film; and;
- c. an etching step by etch back processing of the lens film (Suzuki discloses (Pages 10 – 11, [0017] – [0018]) that the flattening process of layer 17, which is also applied to the layer 13, is done by etching the same).

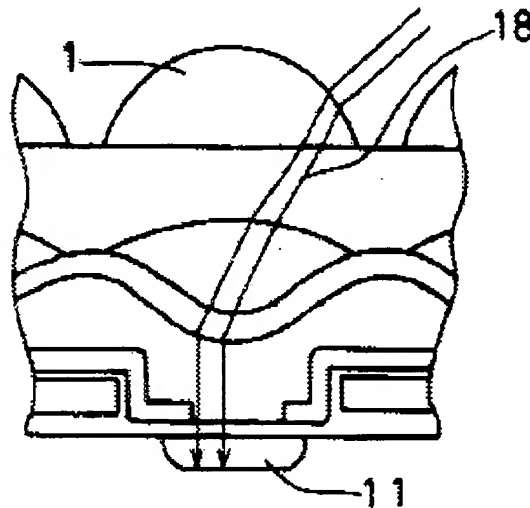
7. Suzuki fails to disclose the creation of concave regions over the convex regions when flattening the lens film (13).

**FIG. 6 ( c )**



8. Sano discloses (Col. 11, lines 15 – 30) and shows in Fig. 6(a) – 6(c) the method of crating a concave lens (2) on top of a convex region in a solid state imaging device by etching.

9. Sano is evidence that ordinary workers in the art would find a reason, suggestion or motivation to create a concave lens on top of the convex region of the solid state imaging device.



**FIG. 3**

10. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Suzuki by etching the flattening layer (13) all the way until creating a concave lens on top of the convex region of the solid state imaging device for advantages such as improving the sensitivity of the structure when the diaphragm of the optical lens is open (Col. 12, lines 3 – 7) as shown in Fig. 3.

11. As for the limitation of “wherein the lens film has a refractive index higher than that of a substance provided in a layer above the lens film”, the same is present since the only substance in Fig. 1 over the lens film (13), which has a refractive index of about 1.5 – 1.7 (Page 8, [0013]), is air with a refractive index of about 1.

12. As for claims 6 – 7, Suzuki discloses (Pages 10 – 12, [0017] – [0018]) the steps of anisotropically etching the insulating film (12/14) follow by isotropically etching the same and also discloses (Page 8, [0013]) that the refractive index of the lens film (13) is about 1.5 – 1.7 and the insulating film is about 1.2 – 1.4.

***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 2003/0168678, US 2005/0110052, and US 2001/0036014.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrés López-Esquerro whose telephone number is (571) 272-9753. The examiner can normally be reached on M - Th 6:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven H. Loke can be reached on (571) 272 - 1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andrés López-Esquerro  
Examiner  
Art Unit 2818

ALE



DAVID VU  
PRIMARY EXAMINER